REMARKS/ARGUMENTS

Claims 5, 6, and 9-34 were pending in the application. In the Office action mailed February 28, 2003, claims 5, 6, and 9-34 were rejected, and claims 20-28 were objected to. Applicants thank the Examiner for attention to the application.

Claims 5, 9, 11, and 34 are now amended. Claims 10 and 18-33 are cancelled.

Claims 5 and 9 are the remaining independent claims in the application. Claim 5 is for a positive coefficient device adapted for use in a circuit protection. Claim 9 is for a method of forming a low switching temperature polymer positive temperature coefficient device suitable for circuit protection use.

Claim 5, as amended, specifies "a polymeric compound between the first laminar foil and the second laminar foil, the polymeric compound comprising a polymer, a plasticizer between 5%-15% by volume of the polymeric compound, and two different carbon blacks; with the positive coefficient device having low room temperature resitivities and a switching temperature approximate 70 degrees Celsius."

The Office action states that "Van Konynenburg et al. discloses PTC compositions that include semi-crystalline polymer (column 8, line 29), a plasticizer (column 10, lines 53-67), and conductive carbon black particles (column 6, lines 59-66) and that have a switching temperature around 70°C (see figure 3)." The Office action also notes that Van Konynenburg et al. does not disclose a composition that contains two different carbon blacks.

The Office action continues that "[h]owever the method for choosing which specific carbon black is to be used in a specific composition is taught (column 6, lines 21 to column 7, line 5)."

It is respectfully submitted that a method for choosing a specific carbon black does not teach the use of two different blacks. In addition, the method in Van Konynenburg et al. apparently referred to in the Office action indicates that PTC behavior increases with particle size ("As the particle size increases, the PTC behavior tends to become more pronounced. However, this valuable effect is counter balanced by the need to include greater proportions by weight of the larger-sized fillers to obtain the same resistivity." Van Konynenburg et al., column 6, lines 23-26. The apparently referred to method also indicates that "the preferred particle size of the carbon black is also dependent on the cross-linking temperature (T_C). As T_C increases, PTC behavior tends to become less pronounced, but this can be offset by an increase in the particle size of the carbon black." Van Konynenburg et al., column 6, lines 50-54.

Accordingly, Van Konynenburg et al. appears to at most suggest the use of a single carbon black with a particular size depending on criteria.

The Office action continues to state that since characteristics of different types of carbon blacks are listed in Van Konynenburg et al., and since many of the carbon blacks have similar properties, it would have been obvious that a mixture of two similarly suitable carbon blacks would also produce a suitable PTC composition.

There does not appear to be any indication in Van Konynenburg et al. that a mixture of two similarly suitable carbon blacks would produce a suitable PTC composition. In addition, the Office action points to types 1 and 2 in the table of Van Konynenburg to show that many carbon blacks have similar properties. A review of Table 3 in Von Konynenburg, et al., which discusses a number of examples, indicates that type 1 and 2 of the carbon blacks of Table 1 are used in examples 50 and 51. Examples 50 and 51 are not in accordance with the invention of Van Konynenburg et al., as they are marked with an asterisk (see also column 13, lines 6 - 8 of Van Konynenburg et al.).

The Office action also states that it would have been obvious to one skilled in the art to use two different types of carbon black according to the criteria in the reference in order to tailor the properties of the resulting PTC. However, there is no indication in Van Konynenburg et al. that the mixture of two carbon blacks would have any beneficial properties whatsoever.

Accordingly, claim 5 is allowable in view of Van Konynenburg et al. Moreover, as the other cited references do not disclose or suggest the use of two different carbon blacks, claim 5 is allowable in view of Van Konynenburg et al., Handa et al., and Frentzel et al.

Claims 13 - 17 depend on claim 5, and are therefore also allowable.

Claim 9 specifies "compounding semi-crystalline polymer, plasticizer, and two different carbon blacks, to form a polymeric compound, the plasticizer comprising approximately 10% by volume of the polymeric compound". Accordingly, in the
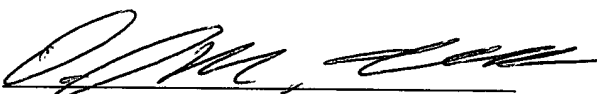
method of claim 9, two different carbon blacks are used. As discussed above, neither Van Konynenburg et al. nor the other cited references disclose or suggest the use of two different carbon blacks. Accordingly, claim 9, and dependent claim 34 are allowable.

In addition, claim 14, which depends ultimately on claim 5, specifies that substantially most of the carbon black is of one type. As discussed above, neither Van Konynenburg et al. or the other cited references disclose or suggest the use of two different carbon blacks. In addition, neither Van Konynenburg et al. nor the other cited references suggest that if two different carbon blacks are used, that substantially most of the carbon black be of one type. Accordingly, claim 14 is further allowable in view of the cited references.

Accordingly, the application is in condition for allowance, and allowance of same is respectfully requested.

Respectfully submitted,

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